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ABSTRACT

This review of research considers both the similarities and differences between adult learners and learners who are children, and applies the findings to second language instruction. First, similarities between children and adults have to do with involving as many senses as possible in learning, allowing for emotional involvement of learners, utilizing verbal and pictorial information, and adapting teaching to different learning styles. However, as learners develop from childhood to adulthood, qualitative differences appear, requiring qualitatively different teaching techniques. Some of these differences are the following: (1) increasing individual differences in learning and goal objectives; (2) increasing specificity of motivational resources and allocation of those resources to tasks that are perceived to be useful to the individual; (3) cognitive differences due to large stores of knowledge and experience and increasing complexity of mental schemata, and a slowing of mental tempo; (4) a change in the nature of the instructor-learner relationship, with the instructor becoming a facilitator of learning; and (5) the importance of non-cognitive factors, such as anxiety. Each of these adult characteristics requires some adjustment in the language class with regard to method, classroom techniques, and course content. (AMH)

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HOW OLDER DOGS LEARN: ADULTS AND LANGUAGE LEARNING

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TESOL, Toronto, March 16, 1983

Although many educational psychologists have made attempts at describing the learning process of children in ways that would aid educators in becoming more effective with students, only a few authors have attempted to apply psychological principles to educational settings in which adults are students, the co-authors of this paper being among this small group (Schaie & Willis, 1978; Knox, 1977; Dave, 1976). This means that teachers of adults are left with very little direction as to how to proceed with teaching techniques which have many times been created to teach the young. The purpose of this paper is to review the research that has been done with regard to the study of learning and memory throughout adulthood and to offer suggestions as to how that research might be applied in the adult language classroom. Unlike other discussions of adult education, this paper will emphasize both the similarities and differences between adult learners and learners who are children. Therefore, in this discussion we will first outline ways in which adult language learners are probably no different from language learners who are children. Undoubtedly, many times teaching techniques emphasizing physical and emotional involvement are not utilized in the adult classroom because assumptions are made about adults and the way they learn which unnecessarily distinguish them from learners who are children. We will attempt to dispel the myth that adults must necessarily be considered to be abstract, unemotional learners. However, we also concede that adults are very different from young learners along many dimensions which are qualitative rather than quantitative. Therefore we would also like to describe those dimensions along which adults differ from children and discuss variations on language teaching techniques which might make those techniques more appropriate for use with adults.

Before beginning this discussion, it should be understood that we do not consider adults to be "neurophysiological misfits" for learning a language as some would argue (Lenneberg, 1967; Scovel, 1969). While acknowledging that there are undoubtedly a number of biological changes, both neurophysiological and biochemical/hormonal, which do occur and which may have an effect on the learning and memory processes, so little is presently known about these changes in relationship to how they might effect changes in learning and memory in adults that we prefer to approach the topic from a psychological perspective rather than a biological perspective. As should be noted in the title, the question has been asked in the form of how older dogs learn, not whether older individuals can learn.

Adults and Children: How Are They Similar?

Perhaps one of the greatest misconceptions of the differences existing between adult and children learners is based on Piaget's conception of stages. As the child progressively moves from the sensorimotor stage, where s/he experiences the world through physical interaction with the environment, to the formal operational stage, where the world is experienced through abstract reasoning and logic, we are told that qualitatively the learner changes in the way information must be presented to him/her. While acknowledging that adult learners undoubtedly have a wider variety of strategies available to them for learning, it may become even more important to get adults involved in their learning using as many senses as possible and using motor behaviors in an attempt to offer further stimulus "strength" to the information being presented for learning.

The techniques suggested by the Total Physical Response approach to English as a Second Language (ESL) offer ways of getting both adults and children more involved in their learning. Total Physical Response appears to offer visual and kinaesthetic support to linguistic stimuli as well as offers supporting environmental context cues to accompany linguistic cues--for both children and adults.

A second misconception closely related to the idea that adults can be taught at a more abstract, impersonal level is that adults need not become emotionally involved in their learning. As will be discussed later with regard to changes in motivational factors affecting the learning process, it may become even more important for teachers of adults to find ways in which students may become more emotionally involved in their language classes. Adults become increasingly selective with regard to the information they believe is important to learn, and teachers must learn how to both become aware of what the mechanism or information controlling that selective learning is and learn how to exercise some control over that mechanism. Only by encouraging the adult to participate emotionally in his/her learning will the teacher be able to maintain some control over the information the adult learner chooses to learn.

Emotional involvement can be effected many ways in the language classroom. The physical involvement utilized in Total Physical Response techniques is one way. Utilizing students as teachers in appropriate situations is another. Discovering early what particular purposes bring adults to the language classroom and the expectations these adults have for what is to be learned and incorporating those expectations into the curriculum is another. Other techniques include use of counseling/learning techniques, role playing, and the use of music in the classroom. And, finally, emotional involvement to increase learning may be effected in such simple ways as increasing the frequency of names of the people in the class in the materials to be learned (Bransford et al., 1977). Increasing emotional involvement and relevancy need not mean a rewriting of present classroom materials, it simply requires simple changes to effect more involvement on the learner's part.

Another similarity between adult learners and children learners is that all learners seem to benefit from dual encoding of materials to be learned. That is, by utilizing verbal information accompanied by pictorial information one enhances the recall of that information (Parham & Schaie, 1976). There are at least two implications for ESL teachers regarding this research finding. One implication is that the more pictorial stimuli used to accompany the teaching of language, the more effective that teaching will be. The second implication deals with materials which may be appropriate for classes dealing with teaching English for special purposes (ESP). While it seems appropriate in the fifth grade, when teaching students new vocabulary and/or concepts regarding a particular content area, to include accompanying pictures as illustrations of that concept, such an approach seems to be inappropriate for adults. However, when considering the research demonstrating that dual encoding is important for adults also, utilizing formats similar to those fifth grade texts might be very appropriate, particularly for use in ESP classes.

Another similarity between adult and children learners deals with the knowledge we have of learning styles. Many times it seems to be assumed that adults, in contrast to children, have one preferable mode of learning style. Because they are long past the sensorimotor stage of learning and because they can now deal with abstract information, their learning styles are converging not diverging. In fact no statement could probably be further from the truth. As will be discussed in the next section, individual differences are increasing into adulthood, not decreasing. This means

that learning styles between individuals are also becoming increasingly differentiated. Working with adults does not mean that a language teacher's "bag of tricks" can become any smaller. In fact in many ways the bag may be required to become even larger. Therefore, both teachers of adults and teachers of children must attempt to recognize the differentiated learning needs of learners with different cognitive styles.

As can be seen from this discussion, then, rather than assuming that children and adults are two distinct groups of learners with separate learning needs, we would rather suggest that children and adults require qualitatively different teaching techniques. As learners intrinsically develop their own goals for their education, the teacher must accommodate classroom materials and his/her teaching style to meet those intrinsically determined goals. It should be noticed in the discussion which follows that even though we have specified differences between children and adult learners along a number of different dimensions, these too are only qualitative differences--not just differences.

Adults and Children: How Are They Different?

Increasing individual differences in learning. Whereas in childhood there appears to be an isomorphic relationship between the development of a biological structure and cognitive function, in young adulthood this isomorphic relationship breaks down (Schaie & Marquette, 1975). Directionality of development is to a great extent determined in childhood because of its relationship to biological development; however, in adulthood the range of dimensions along which development may occur and the direction and intensity development takes along that range becomes increasingly differentiated throughout adulthood (Baltes & Willis, 1977). This means, then, that development throughout adulthood takes on a more multidimensional and multidirectional aspect than is characterized throughout childhood (Baltes & Willis, 1979). And, as was mentioned earlier, differences between learners become larger, not smaller.

While acknowledging the increasing individual differences between adult learners, educators also need to be aware of a similar developmental task (Havighurst, 1972) of adults which make them similar to one another as learners and which differentiates them from learners who are children. In adulthood, the developmental tasks of the individual have changed so that the goal objectives of individual behavior are no longer primarily directed toward skill acquisition as they are in childhood but instead are directed toward the application of acquired skills to responsible social roles and societal tasks (Kohlberg, 1973; Schaie, 1977/78). The educator must realize that this change in goal objectives of the individual in the direction of applying skills to responsible social roles and societal tasks should affect the language classroom. With the application of acquired skills to specific tasks come increasingly differentiated vocabulary needs. And inherent in taking on different social roles is knowledge and awareness of the social nuances of different syntactical structures, nuances which children are neither expected to be aware of nor understand (Halliday, 1978; Brown, 1980; Belasco, 1967). Language teachers of adults, then, are faced with increasingly differentiated and increasingly more subtle, less explicitly definable language needs. To be able to respond to these language needs, the language teachers of adults needs to be aware of task-specific roles adult students will be taking to aid development of language skills. Role-playing is an obvious teaching technique as would be "field trips" in which the teacher would support students linguistically as they performed specific tasks required of them. In responding to the needs of adult learners with regard to the social nuances of language, Bodman and Lanzano's book Milk and Honey (1979) offers exercises in which different language functions are explored. Particularly in work with adults, language needs to

be "mapped onto" appropriate social contexts. In Knox's (1977) terms, the adult's community context must be taken into consideration when choosing appropriate materials for the adult classroom.

Motivational differences. Prior to adulthood, motivation to learn seems to have a strong extrinsic component, since education of the young is compulsory. Continued learning in adulthood, however, is primarily self-initiated. The intrinsic nature of motivation in the adult learner undoubtedly poses an enormous challenge for the adult educator. While acknowledging the fact that the motivational influences on children are not easily specified and are not necessarily similar across individuals, because adults are increasingly differentiated from one another in terms of background experiences and learning experiences, they come to the educational setting with increasingly differentiated expectations about what they want to learn and how they want to learn it. The teacher of adults is placed in an even more difficult role when trying to meet all of these expectations.

Motivational differences become particularly important when considering the fact that as we get older we tend to have fewer energy resources to allocate to an increasing number of tasks and to increasingly more complex tasks. Because this is the case, adults seem to psychologically defend themselves against undesirable stimuli. One researcher calls this a preattentive perceptual defense mechanism (Erdelyi, 1974). While children undoubtedly also possess such a mechanism, in adults this mechanism must be increasingly more selective, being controlled by one's increasingly differentiated store of life experiences. This is undoubtedly why relevance becomes such a keyword for adult educators and for adult language teachers, in particular. If an adult does not perceive a task as being worth the allocation of resources, regardless of teacher perceptions, no resources will be allocated. While it is impossible for a teacher to review each person's life experiences and attend to each one, attempting to help students make as many expectations explicit about what is desired from the language class can only aid the teacher in switching off the preattentive perceptual defense mechanism.

In teaching languages, the teacher of adults also must deal with specific motivational differences in learners with regard to the learner's attitude towards the ethnolinguistic group whose language is being acquired. Neufeld (1979) and Oller and Perkins (1978) believe that the difference between adult and children language learners is in part caused by social and psychological factors. Gardner and Lambert (1972) suggest that the willingness to identify with members of another ethnolinguistic group may affect language acquisition skills. What this implies for language teachers of adults, then, is that discussions of cultural "myths" may need to be explored. Attitudes and feelings with regard to the target language's cultural group need to be expressed both so that students might overcome a motivational hurdle and so that students might better deal with this group based on less stereotypic views of the culture.

Qualitative changes in cognitive factors. The literature in the area of adult learning and memory is relatively new and presents conflicting evidence. It appears to be the case that when adults are given tasks which are relatively meaningless and novel, they perform less well than younger subjects. However, with regard to adult intelligence, a longitudinal study covering a time-period of 25 years shows no significant decline in performance of a number of different mental abilities (Schaie, 1982). This suggests that while learning is undoubtedly a qualitatively different process for adults than it is for children, this does not mean that adults have lost or are losing their mental capability to learn.

However, there are definite differences in the cognitive structures of adults and children which do affect the learning process. The first of these differences has to do simply with regard to the amount of information adults already have stored in long term memory. Their stores of knowledge are both broader and more complex than that of the child. As mentioned earlier, the increasingly specialized language skills required of adults as a result of the increasingly hierarchicalized stores of knowledge they are expected to possess is one way in which language teachers are affected by these increasing stores of knowledge. Language teachers must both attempt to meet these increasing language needs as well as deal with the interference caused by these existing stores of knowledge. Researchers interested in studying the interference phenomenon have suggested a number of ways previous information can interfere with the language learning process. One type of interference is caused by overgeneralizations and analogies made with existing language stores which may either aid or hinder the second language learning process (Richards, 1971). Another type of interference which affects adults in particular is suggested by Brown (1980). He believes that the increasing knowledge stores as well as changes in cognitive structure effect something he terms "formal operational interference." This type of interference is caused by the adult's tendency to be overanalytic and intellectually centered with some language learning tasks which require a different learning style. However, whatever the type of interference, it should be understood that when an adult attempts to learn new information it must be related to large amounts of experience and information the adult already possesses.

Accompanying these larger stores of knowledge are increasing numbers and increasing complexities of schematas (Bartlett, 1932; Cofer, 1977; Kintsch, 1978), another cognitive factor affecting adult learning. A schemata is an organized representation of a person's knowledge about some concept, action or event, or a larger unit of knowledge which is used to guide one's actions in different situations or to interpret someone else's actions in different situations (Gatbonton & Tucker, 1971; Streiff, 1978; Steffensen, Joag-Dev & Anderson, 1979). Differences in world knowledge or schematas have a significant effect on the comprehension and reconstruction of information existing as part of different events (Dooling & Christiaansen; Kintsch, 1976). These increasing schematas affect the language teacher at the macro level of teaching a language. Not only does an adult student need to be taught the appropriate vocabulary and the appropriate syntax for different situations, s/he must also be taught the appropriate framework or context within which to tie both vocabulary and syntax together. While this appears to be a major task, such need not be the case. One exercise used by a teacher in a classroom with adults which seemed to be an appropriate technique for "teaching" schematas was done in a reading class. In this class students read a passage about two people going to a restaurant to eat. The students were then asked to describe how it would have been done differently in their country. While these questions served as a way to get students emotionally involved in using their language skills to share information about their country, it also could have served as a technique through which the teacher could have "taught" a cultural schemata. A role-playing exerci e, then, could have made a nice summary exercise to this particular discussion. Another cognitive change which accompanies these increasing stores of knowledge and increasing number and complexity of schematas is increasing expectations with regard to what is important and relevant information to be learned. As Knox (1977) states, it is usually helpful to have some way of exploring the expectations of the adults who participate in an educational activity and of arriving at congruent shared expectations and objectives. As mentioned earlier, throughout the lifespan educational experiences are becoming increasingly intrinsically motivated at the same time specific life goals are becoming more carefully delineated. The cognitive mechanism which either turns "on" or "off" the learning process is also becoming increasingly selective due to decreased energy resources and more specific learning needs. By exploring expectations students

of processing in that it secures close attention to the task, produces stronger time, and may allow more redundancy of cues and time for processing new information (R.M. Belbin, 1965, 1969; Belbin, 1958; Belbin & Downs, 1966; Belbin & Shimmin, 1964; Naylor & Harwood, 1973).

A final cognitive difference between adults and children is that adults show a slowing of "mental tempo." It appears to be that one of the major differences between adult education and the education of children is that adults require a slower instructional pace (Schaie & Willis, 1978). The older the adult the more important this becomes. The slower pace is required because of a slowing in information processing capabilities but is also undoubtedly related to the depth of processing issue. More repetitions may be required to allow for the information to be learned to be encoded by the individual, and more time may be needed to be allowed for each individual to relate the new information presented in class to previous information already existing in cognitive structure.

To summarize these different cognitive changes and the effect they should have on the methodology and materials used in the language classroom, Knox (1977) presents six different ways in which educators can better help their students in understanding the relationship between the organized knowledge to be learned and their own personal experience:

1) Utilize varied resources in the presentations of information
2) Clarify the structure of the information to be learned and, when possible, allow student input into that structure
3) Emphasize student learning abilities not disabilities
4) Attempt to make classroom experiences memorable, personally relevant encounters
5) Allow for personal pacing when possible
6) Offer feedback when appropriate

Changing nature of the instructor-learner relationship. Because the motivation of adults for being in an educational setting changes from being externally compelled to being a voluntary, self-initiated attendance in most circumstances, the role of the teacher may need to change from a director of learning to that of a facilitator or resource person (Houle, 1974; Huberman, 1974). Whereas society and the educator direct the education of the young, in most cases the content and method of learning in adulthood is largely determined by the learner--if not explicitly as yet, at least such is the case implicitly as has been discussed in the qualitative cognitive differences in learners across the lifespan. Although we are not advocating that the teacher relinquish total control over materials to be covered and/or language skills to be taught, we are advocating the need for teachers to be increasingly aware of what adults consider to be their language needs. More opportunities for the student to act as teacher may be required, so that teachers can begin to get students more invovled in both the teacher and learning process and so that teachers might become better aware of difficulties students are having and/or strategies students are using to learn the language. More opportunities undoubtedly also need to be given to students to express expectations with regard to language needs, or difficulties they may be having in dealing linguistically with specific situations.

While this role has not been the traditional one assumed by teachers, in working with adults it would seem that this role might help in dealing with many of the previously discussed differences. The teacher is allowing the students to become emotionally involved in the learning situation while aiding in the determination of learning materials which will be relevant to their own needs. One of the advantages of having adult learners as students, which may also be one of the disadvantages, is that in most cases adult learners have a good idea of what they

would like to get from a class and how they might be able to integrate new information received from that class with past information to meet their own goals. Educators of adults need to learn to listen to those needs so that those goals might facilitate the task of teaching rather than interfere with it.

Increasing importance of noncognitive factors. The final difference between children and adult learners is related to the effect of different noncognitive factors on the learning process. The concept that learning may be a function of cognitive abilities plus performance-related noncognitive factors has been discussed in the child development literature (Flavell & Wohlwill, 1969). However, noncognitive factors (e.g., sensory deficits, motivation, response speed) play an even more important role in learning performance in adulthood. Knox (1977) emphasizes the role that personal or social maladjustment may take in the learning situation, particularly with adults. He states that support and assistance must be provided for adults with few educational experiences who are experiencing defensiveness and anxiety with regard to their role as learners. This type of noncognitive factor, in most cases, is particularly relevant to the language teacher who must deal with students who are apprehensive both about the learning environment and the new cultural context in which they find themselves. While we are not necessarily advocating that the teacher become a counselor, discussions centered around some personal adjustment issues may be useful in some classrooms to aid in minimizing the effect of these noncognitive factors on the learning process.

Conclusions

While much information exists which suggests appropriate differences between young and older learners, much information is still needed. A life-long approach to learning has been advocated by the two co-authors of this paper as serving preventative, facilitative and remedial, as well as preparatory functions (Schaie & Willis, 1978). Because of the changing learning needs required of adults by rapid technological change (Dubin, 1972; Wroczynski, 1974) and because of the lengthening productive lifespan which may in time effect a lengthening of the time spent in the work force, much information regarding the adult learning process is greatly needed. Although a few studies have been done attempting to map out appropriate instructional strategies for the adult learner (DiVesta, Sanders, Schultz & Werner, 1971; Kropp, Nelson & King, 1967; and Cronbach & Snow, 1977), the increasing importance of individual variability provides a fertile area for educational trait-treatment interaction research (Berliner & Cahen, 1973). The field of adult education holds many opportunities for researchers.

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